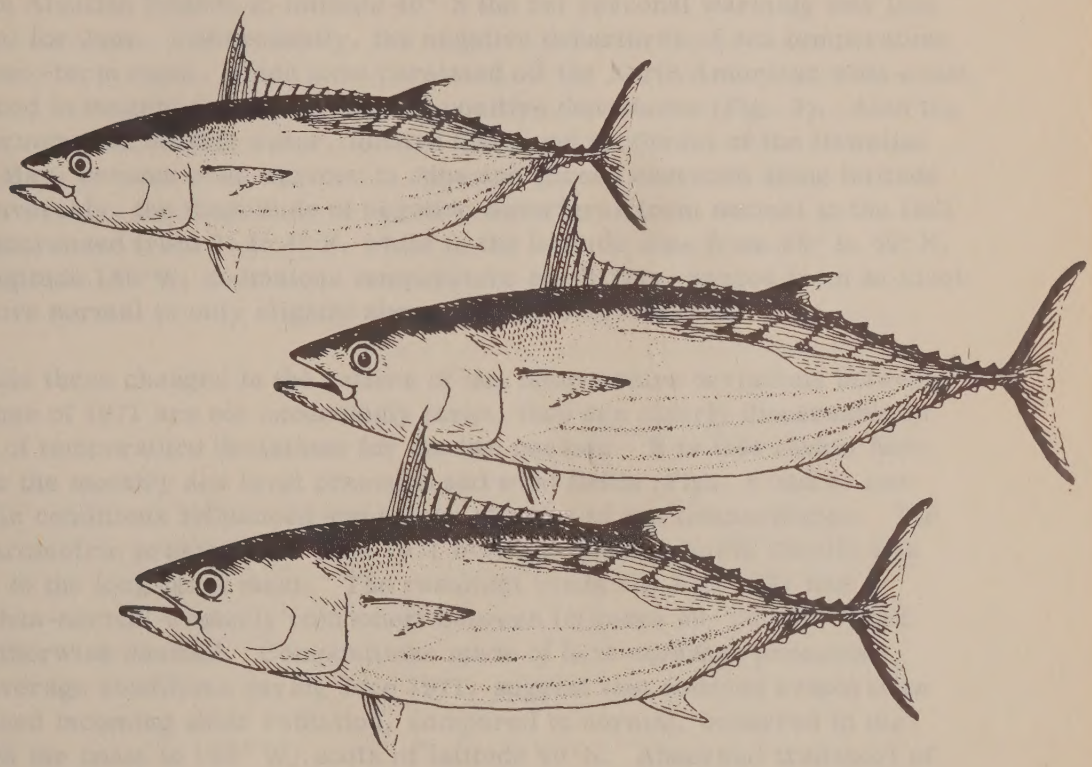
JUNE 1971

FISHING INFORMATION

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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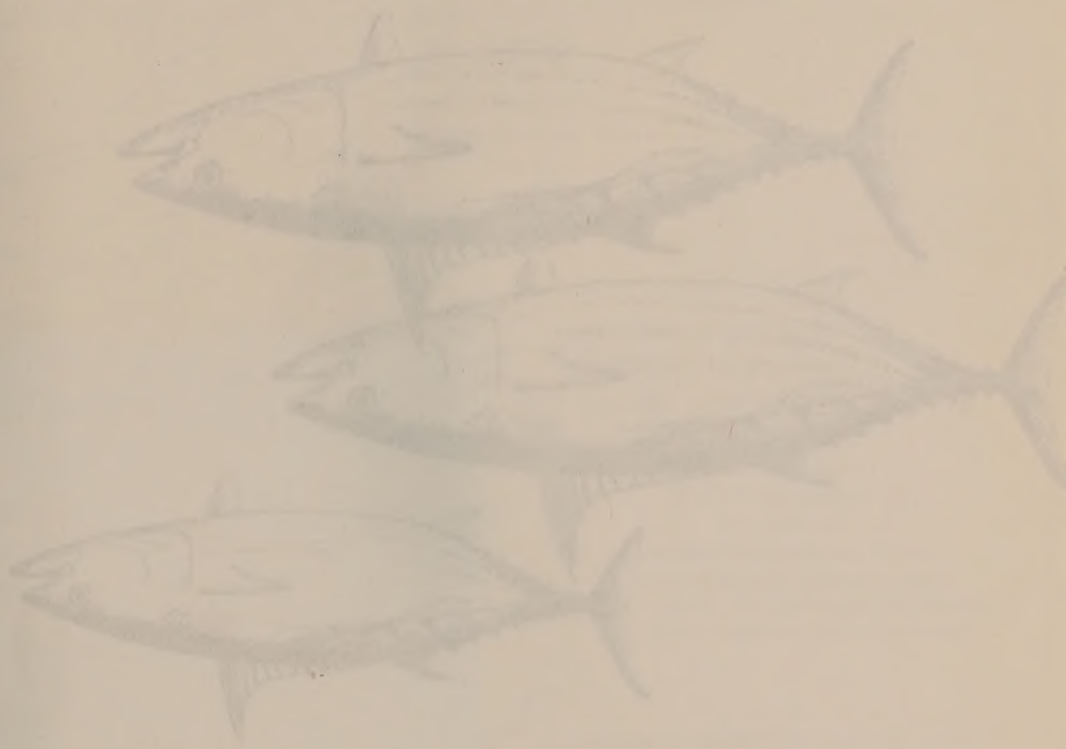

NARRATIVE DESCRIPTION OF OCEAN TEMPERATURE CONDITIONS

Northeastern Pacific

An upsurge of early summer warming in the last 15 days of June increased sea surface temperatures faster than normal in most of the coastal region from British Columbia to Baja California, and seaward in a narrowing zone located approximately between latitudes 25° and 35° N. In the Gulf of Alaska and in waters south of the Aleutian Islands to latitude 40° N the net seasonal warming was less than normal for June. Consequently, the negative departures of sea temperature from the long-term mean, which have persisted off the North American west coast, were reduced in magnitude or converted to positive departures (Fig. 3). Also the area of warmer than normal water, located north and northwest of the Hawaiian Islands in May, became even warmer in June and spread eastward along latitude 30°N. Conversely, the magnitude of negative departures from normal in the Gulf of Alaska increased from 2° to 4° F, while in the latitude zone from 35° to 45° N, west of longitude 140°W, anomalous temperature conditions changed from as much as 2° F above normal to only slightly above, or fell below normal.

While these changes in the pattern of sea temperature deviations between May and June of 1971 are not exceedingly large, they are clearly discernable in the charts of temperature deviations for the two periods. It is less clear, however, from the monthly sea level pressure and wind fields (Figs. 8 and 9) how atmospheric conditions influenced anomalous changes of sea temperatures. The average barometric pressure for June 1971 over the eastern North Pacific was very close to the long-term mean. The resultant winds for June 1971 had a stronger-than-normal westerly component between latitudes 40° and 50° N but were not otherwise unusual. Computations made of heat exchange processes, based on average conditions during June 1971, suggest that reduced evaporation and increased incoming solar radiation, compared to normal, occurred in the region from the coast to 135° W, south of latitude 40°N. Abnormal transport of surface waters due to wind stress also may have contributed to increased warming in this region.

These computed components of heat exchange, involving observed properties of the atmosphere and ocean averaged over a month, do not explain why the rise of sea temperature between May and June of this year was greatest between latitudes 30° and 35°N, west of about longitude 130° W. Information on a shorter time scale is available in the form of synoptic barometric pressure charts transmitted daily to the Fishery-Oceanography Center from the Fleet Numerical Weather Central at Monterey. They show that a fairly intense low pressure system was present for several days beginning about June 13 at or south of latitude 40° N in the neighborhood

of longitudes 140° to 155° W. Strong southerly winds in the southeast sector of this system occurred in the right location to have caused the observed anomalous temperature increase by advection (movement of warm water northward due to wind stress action). Northerly winds in the northwest sector of the system combined with the earlier occurrence of another vigorous low pressure system during June 8-10, north of latitude 50° N, must have contributed to the reduced warming in those areas to the north of latitude 40° N and in the Gulf of Alaska through movement of cold water southward due to wind stress. It may be reasonable to conclude that the impact of intense atmospheric activity, even though short-lived, lingers on in the ocean after the causal event has passed.

The synoptic pressure charts also clarify to some degree the change in conditions between the first and second half of June along the U. S. west coast. The earlier period was characterized by strong pressure gradients accompanied by increased northerly winds resulting from an eastward shift of the eastern Pacific high pressure center from its usual position. Later in the month the high became weaker and its center shifted to the west with a consequent slackening of the northerly coastal winds. In this case, the cold coastal temperature condition is in part caused by the upwelling process which is maintained only as long as the strong northerly winds persist. Therefore it reverts quickly to a warmer equilibrium condition when the wind subsides.

Eastern Tropical Pacific

The distribution of positive and negative deviations of sea surface temperatures for June 1971 from the long-term mean is generally similar to the pattern which existed in May. The relatively cold water extending from the South American coast westward to the Galapagos Islands (Fig. 5) dropped from 2° F below normal in May to 4° F below normal in June (Fig. 6) suggesting intensification of upwelling. Farther west along the equator, the deviations are alternately positive and negative. Sea temperatures off Central America have become relatively warmer, compared with the previous month, northwest of Acapulco except for cold areas persisting in the vicinity of the Revillagigedo Island and off the southern part of Baja California. The sinuous belt of higher-than-normal temperatures stretching westward from Central America shifted north somewhat from its location in May, while the area of warmer-than-normal water in the vicinity of the Hawaiian Islands has remained about the same. The intermediate zone of cooler-than-normal water shrunk correspondingly. The warm temperatures along latitude 10° N coincided approximately with the location of the ITCZ (inter-tropical convergence zone) during June. Winds in the ITCZ were lighter than in the adjacent regions to the north and south and therefore decreased heat loss from evaporation would be expected in the zone.

SEA SURFACE TEMPERATURE CHARTS, PACIFIC OCEAN

JUNE 1971

Acknowledgements

The following organizations and stations contributed data for the June charts:

Global Marine Inc.; GLOMAR CHALLENGER
Hopkins Marine Station, Pacific Grove, California, J. P. Balesteri
Instituto Hidrografico de la Armada, Valparaiso, Chile
Inter-American Geodetic Survey by L. Peren at Puerto Armuelles, Panama; P. Lopez at Talara, Peru
Kelco Company, San Diego, California
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National Weather Service, San Diego, California
National Ocean Survey, Pacific Marine Center, Seattle, Washington
Oregon State University, Department of Oceanography, Corvallis, Oregon
Pacific Environment Institute, Fisheries Research Board of Canada, West Vancouver, British Columbia, by H. J. Hollister from observations; G. C. Wilks at Langara Island; D. C. Robinson at Cape St. James Light; Lilly Collins at Kains Island Lightstation; O. A. Edwards at Amphitrite Point Light
Pacific Missile Range, Range Operations Department, Geophysics Division, Point Mugu, California
Scripps Institution of Oceanography, La Jolla, California, by Margaret Robinson
Scripps Institution of Oceanography Research Vessel ALEXANDER AGASSIZ
U. S. Naval Weather Service, Fleet Numerical Weather Central, Monterey, California
Fishing Vessel TYPHOON

Charts

Figure 1. -- Mean sea surface temperature, eastern north Pacific Ocean. Squares show temperatures at weather ship stations. Numerals on shore are temperatures at coastal and lightship stations.

Figure 2. -- Mean sea surface temperature chart, western north Pacific Ocean.

Figure 3. -- Deviation of sea surface temperatures, eastern north Pacific Ocean from long term charts of H. O. 225. Hatched areas are colder in 1971.

Figure 4. -- Deviation of sea surface temperatures, eastern north Pacific Ocean from those of 1970. Hatched areas are colder in 1971.

Figure 5. -- Mean sea surface temperature, eastern tropical Pacific Ocean. Numerals on shore are temperatures at coastal stations.

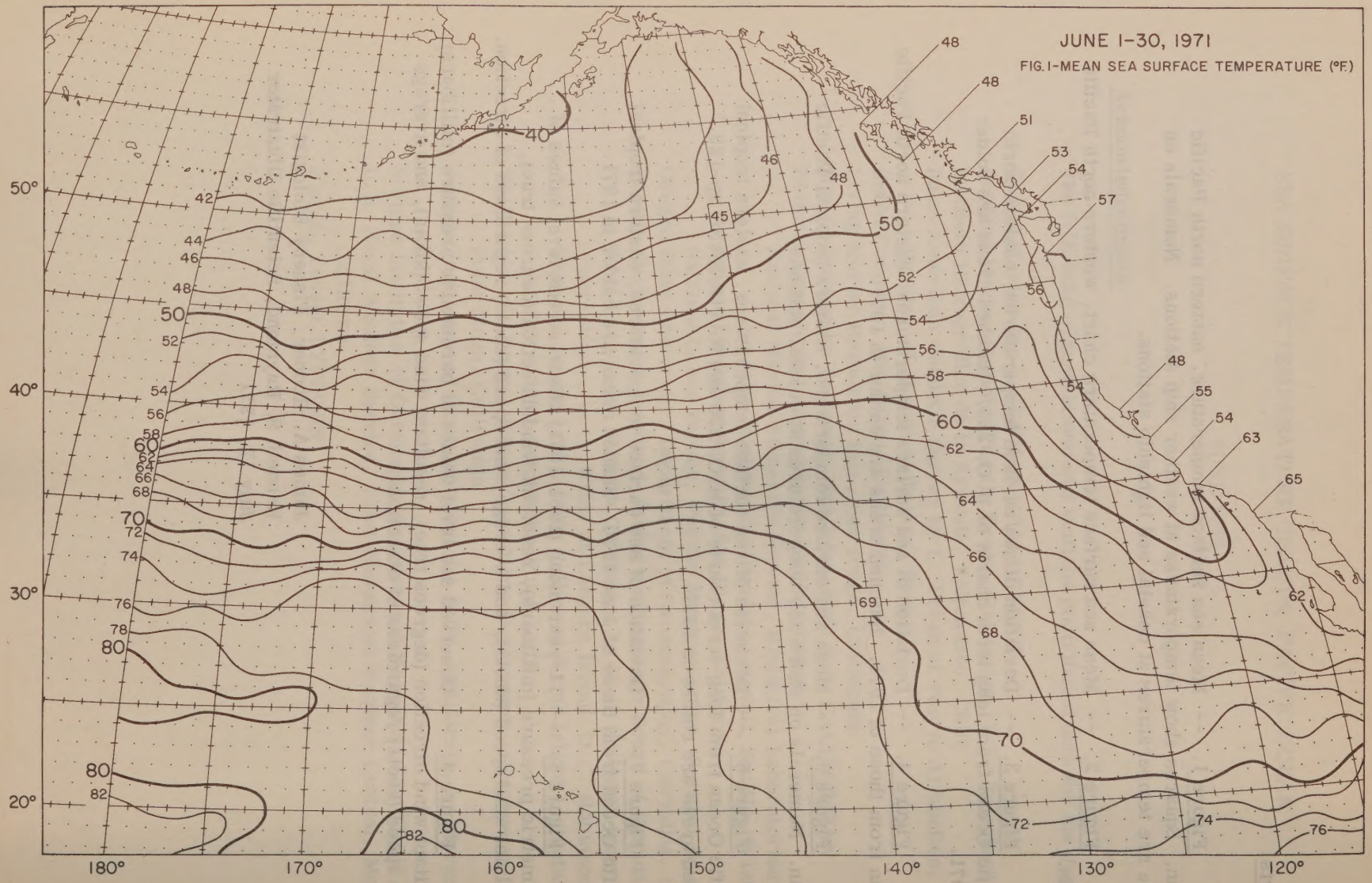
Figure 6. -- Deviation of sea surface temperatures, eastern tropical Pacific Ocean from long-term charts of H. O. 225 and NAVOCEANO sp-123. Shaded areas are colder in 1971.

Figure 7. -- Deviation of sea surface temperatures, eastern tropical Pacific Ocean from those of June 1970. Shaded areas are colder in 1971.

Figure 8. -- 11-year mean (1961-1971) observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots), and average wind speed (knots) regardless of direction.

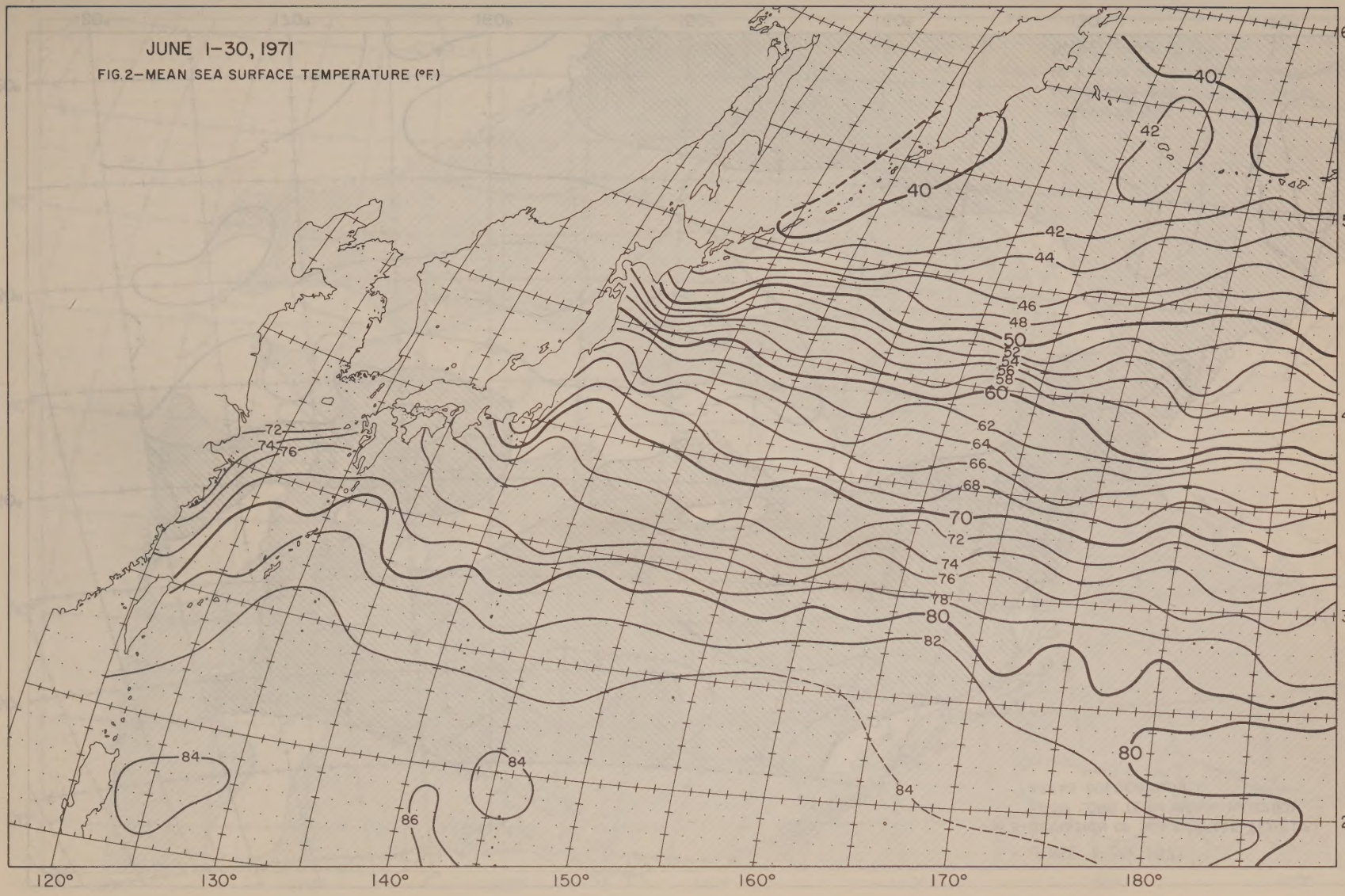
Figure 9. -- Observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots), and average wind speed (knots) regardless of direction.

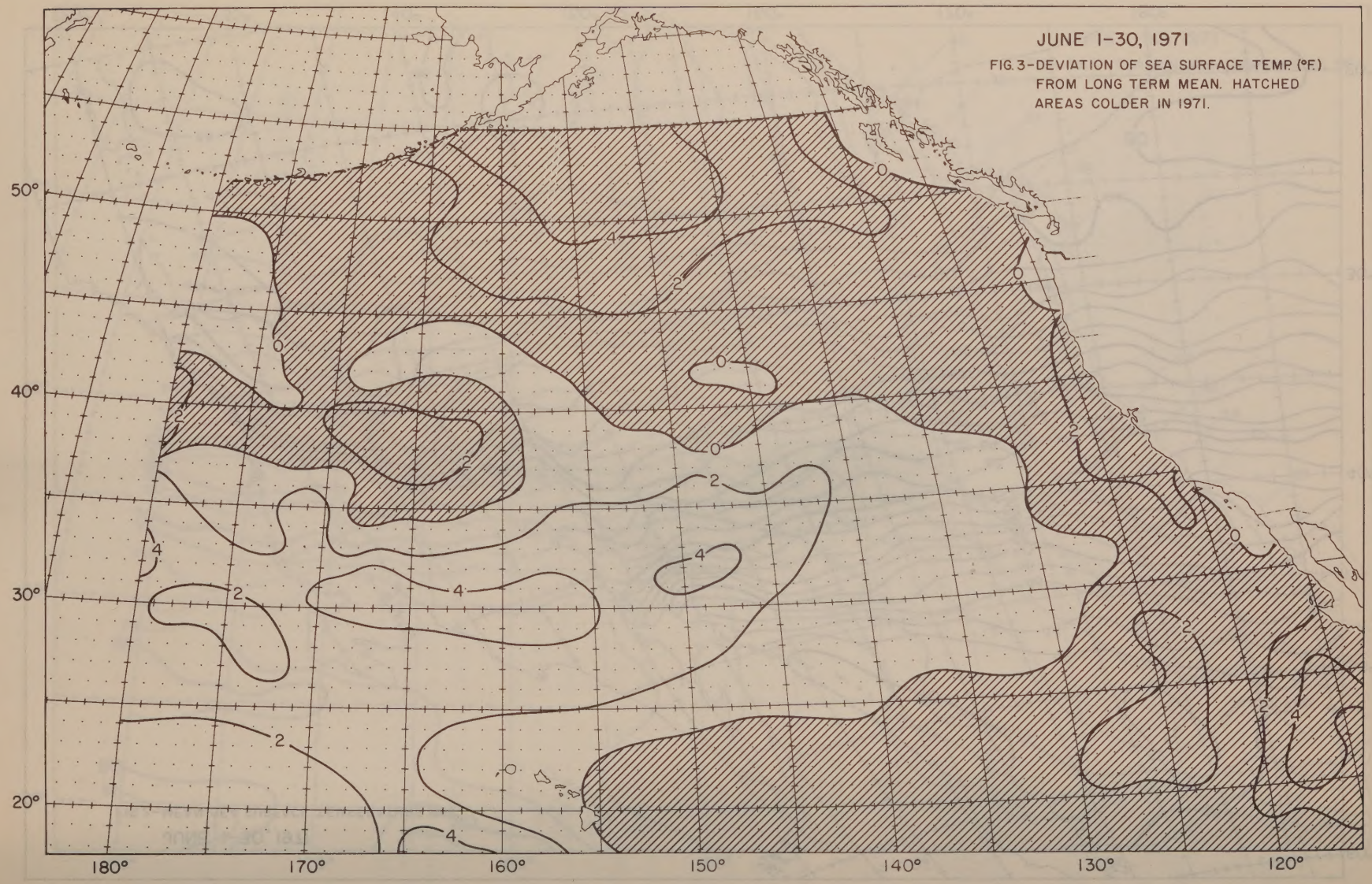
James A. Renner, Fishery Biologist
Kenneth S. Raymond, Scientific Illustrator
July 13, 1971

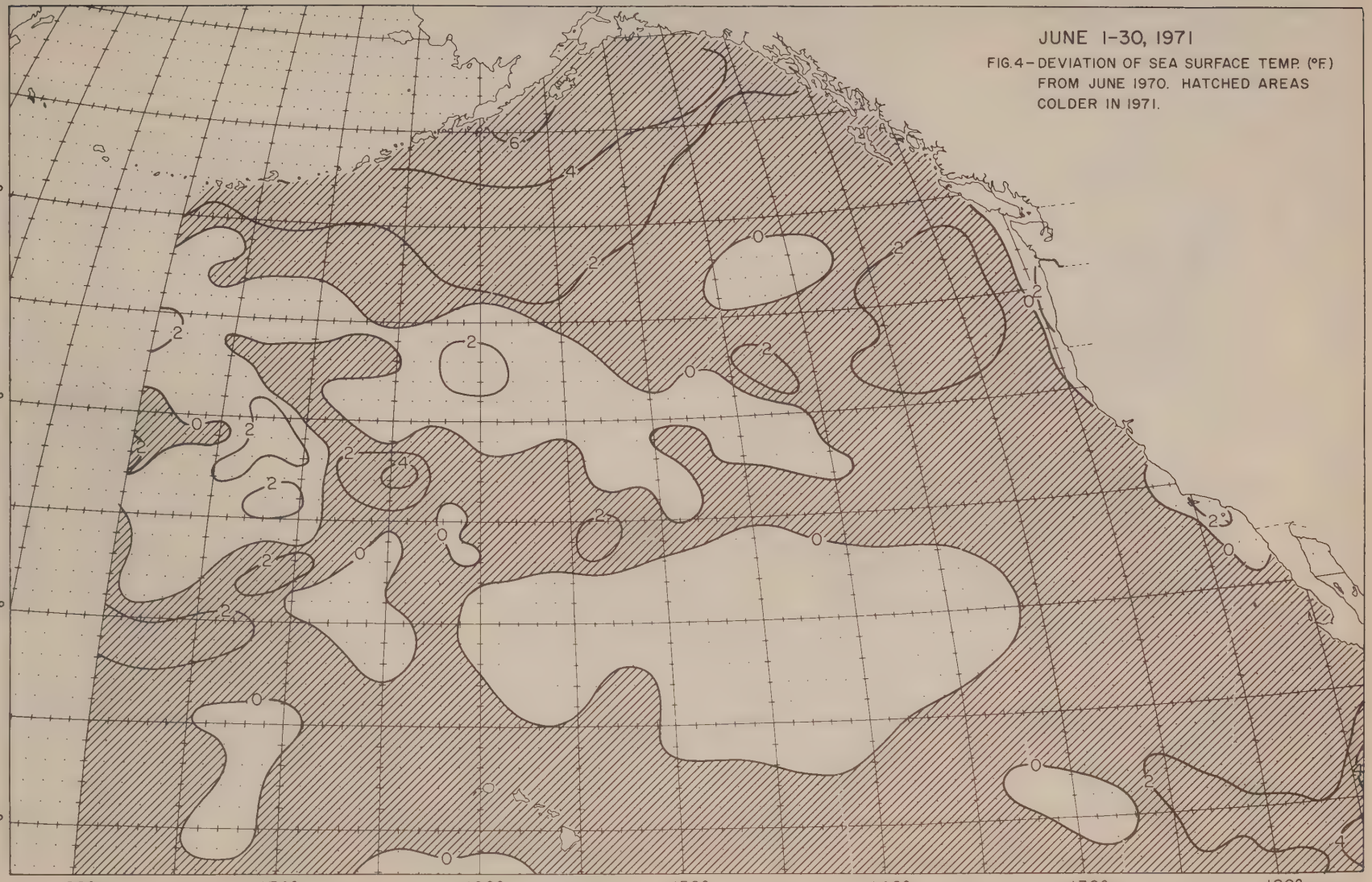

JUNE 1-30, 1971
FIG. 1-MEAN SEA SURFACE TEMPERATURE (°F.)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
45
69
48
48
51
53
54
57
56
48
55
54
63
65
62

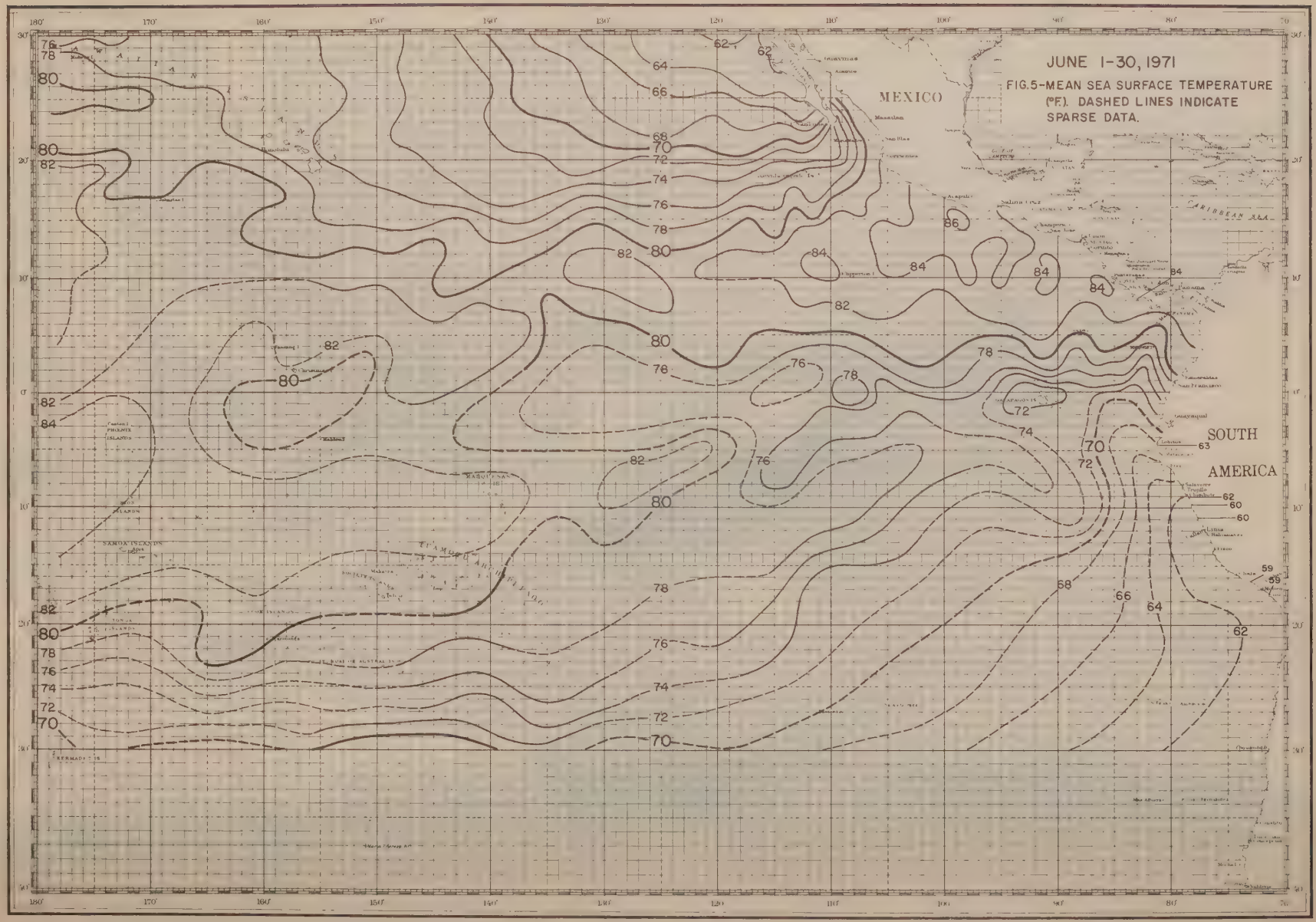
JUNE 1–30, 1971

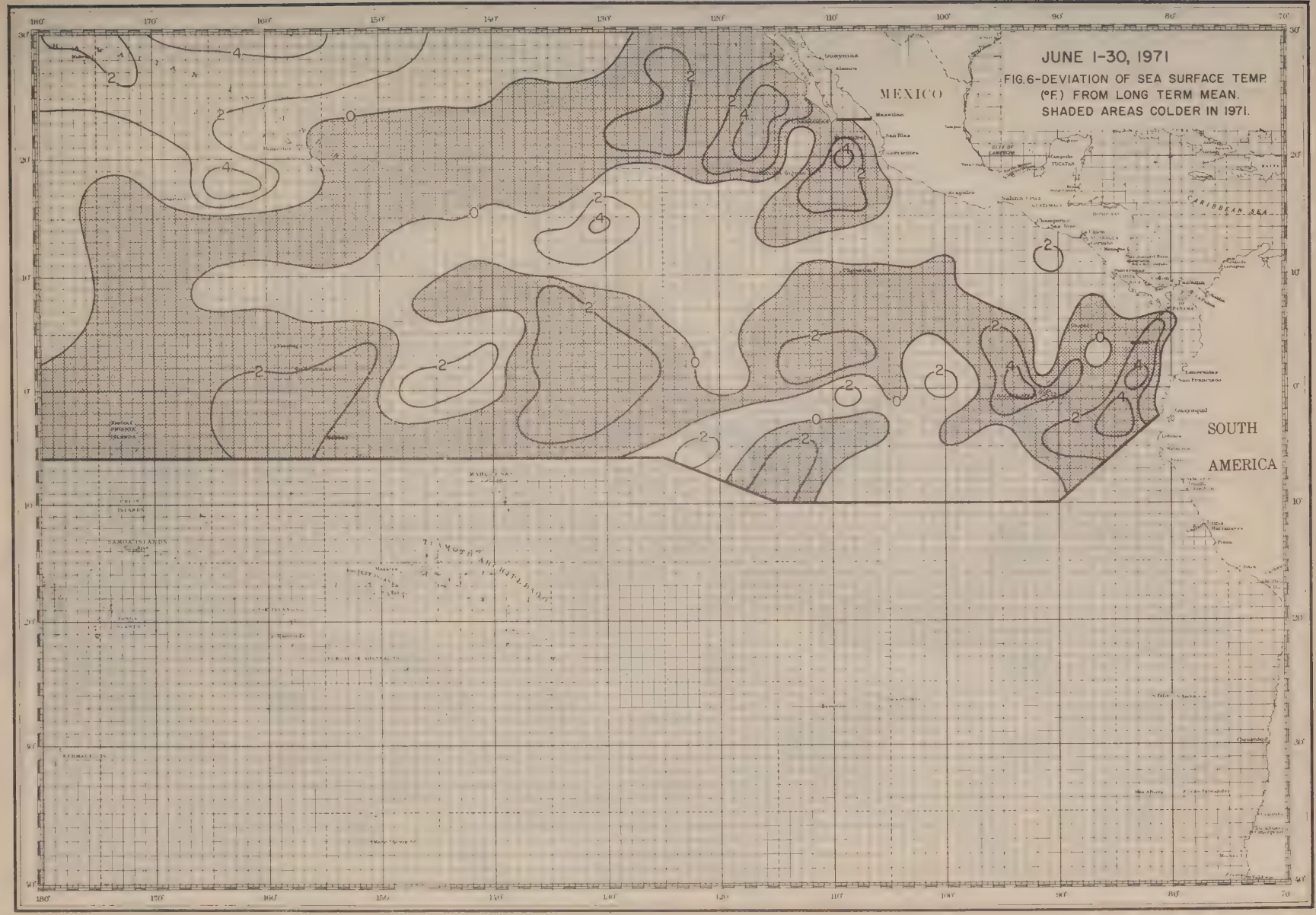
FIG. 2–MEAN SEA SURFACE TEMPERATURE (°F.)

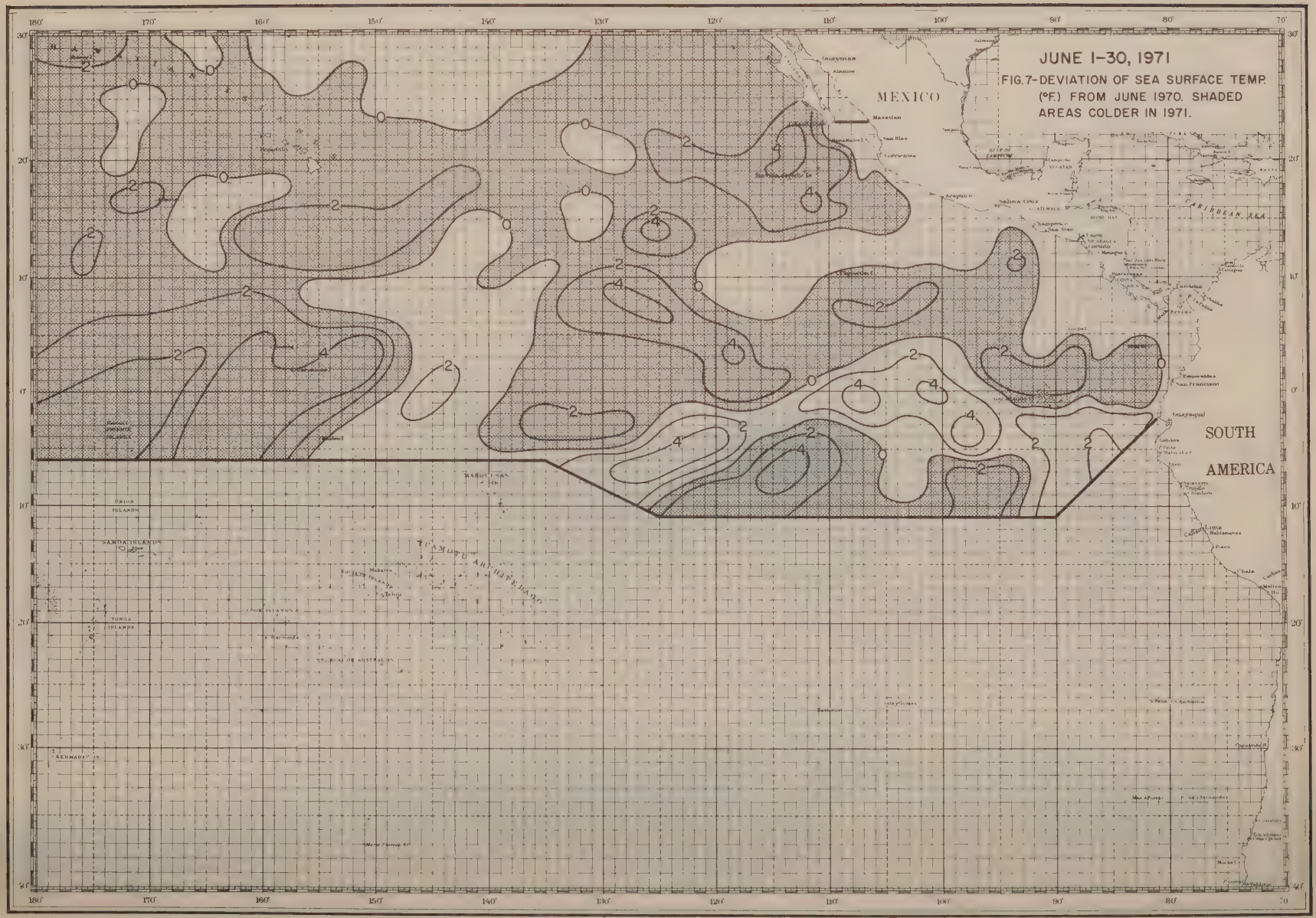


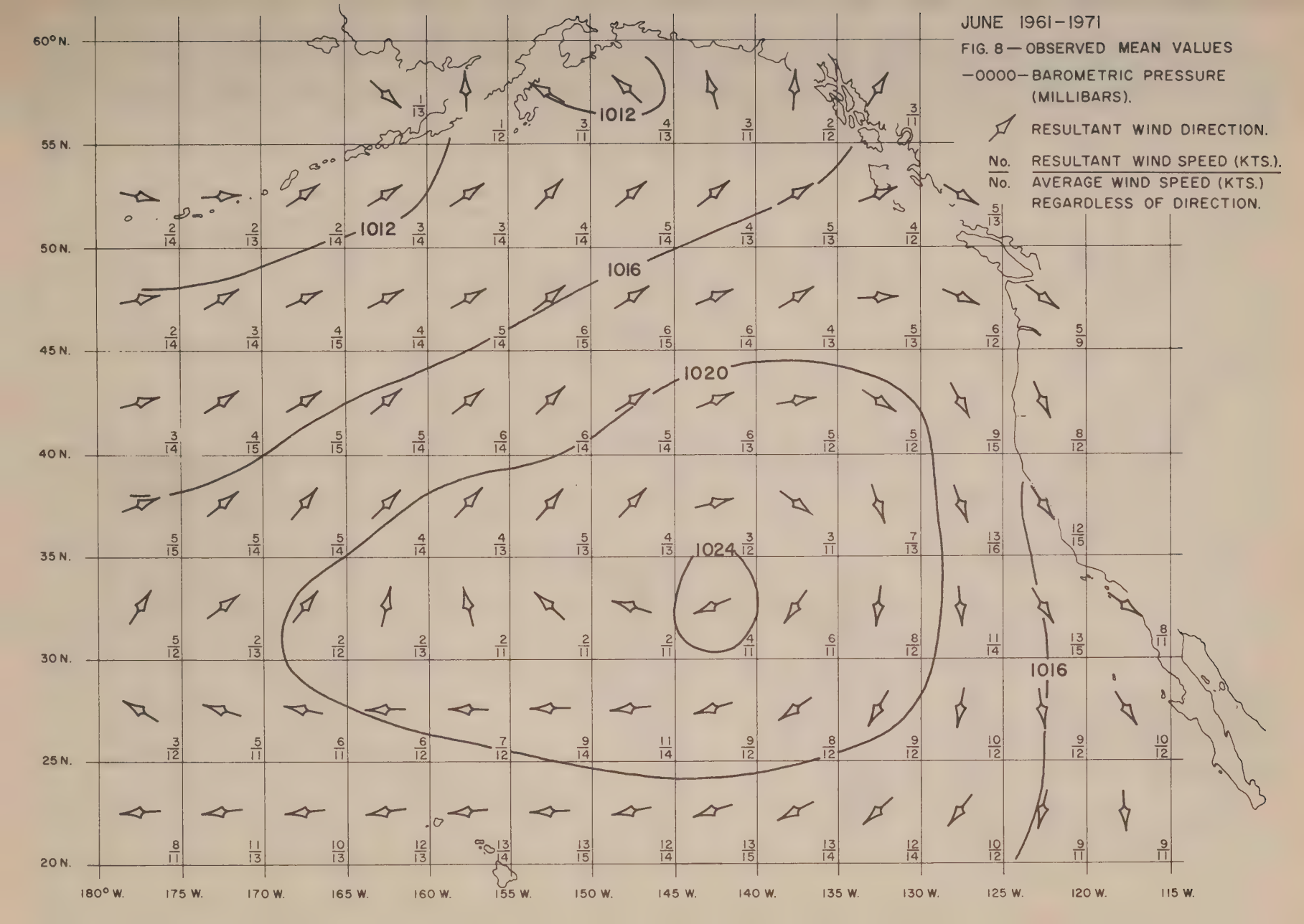

JUNE 1-30, 1971
FIG. 3-DEVIATION OF SEA SURFACE TEMP. (°F.) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1971.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4

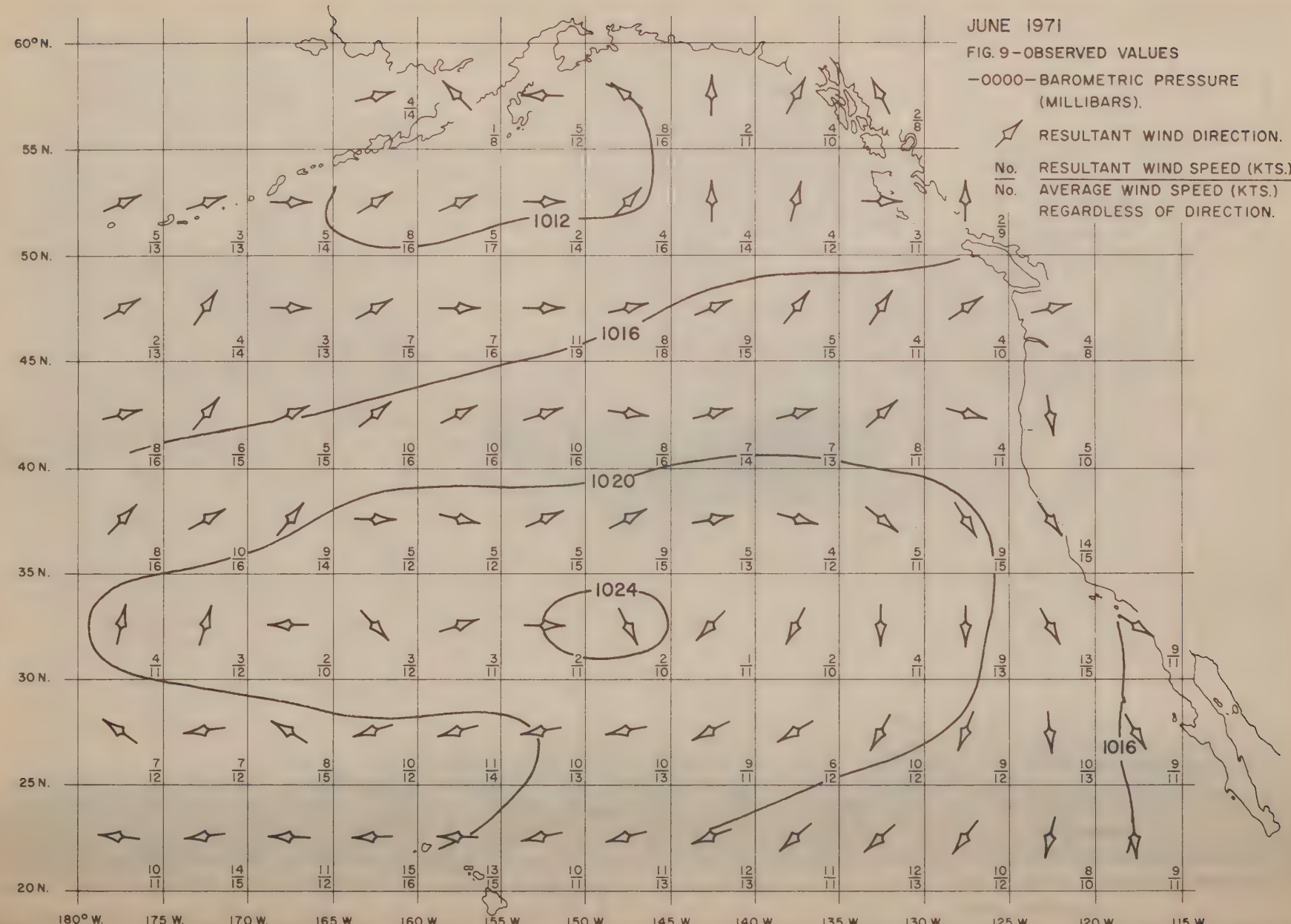

JUNE 1-30, 1971
FIG.4 – DEVIATION OF SEA SURFACE TEMP. (°F.) FROM JUNE 1970. HATCHED AREAS COLDER IN 1971.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

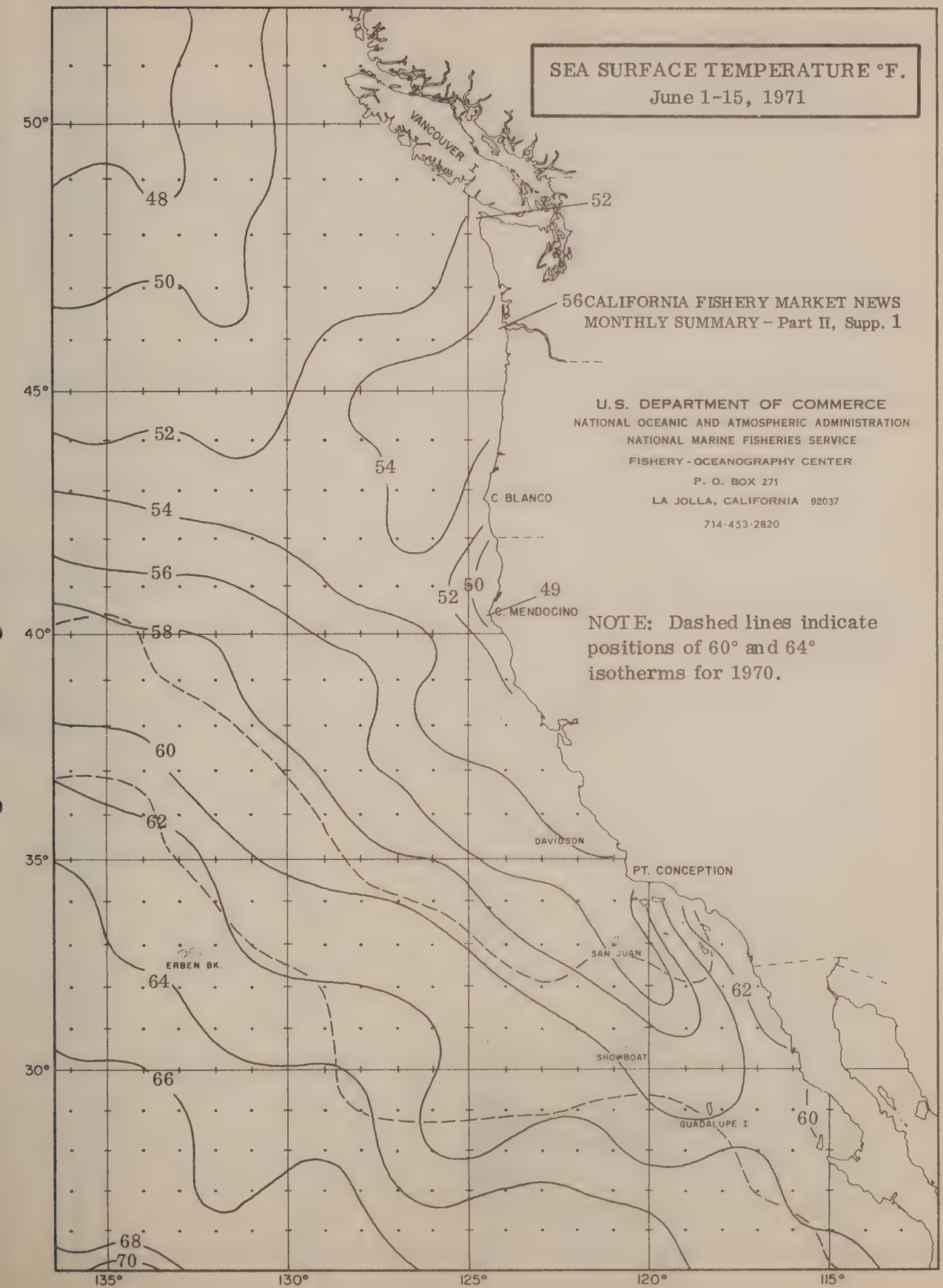

JUNE 1-30, 1971
FIG.5-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
PHOENIX ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
KERMADEC IS.

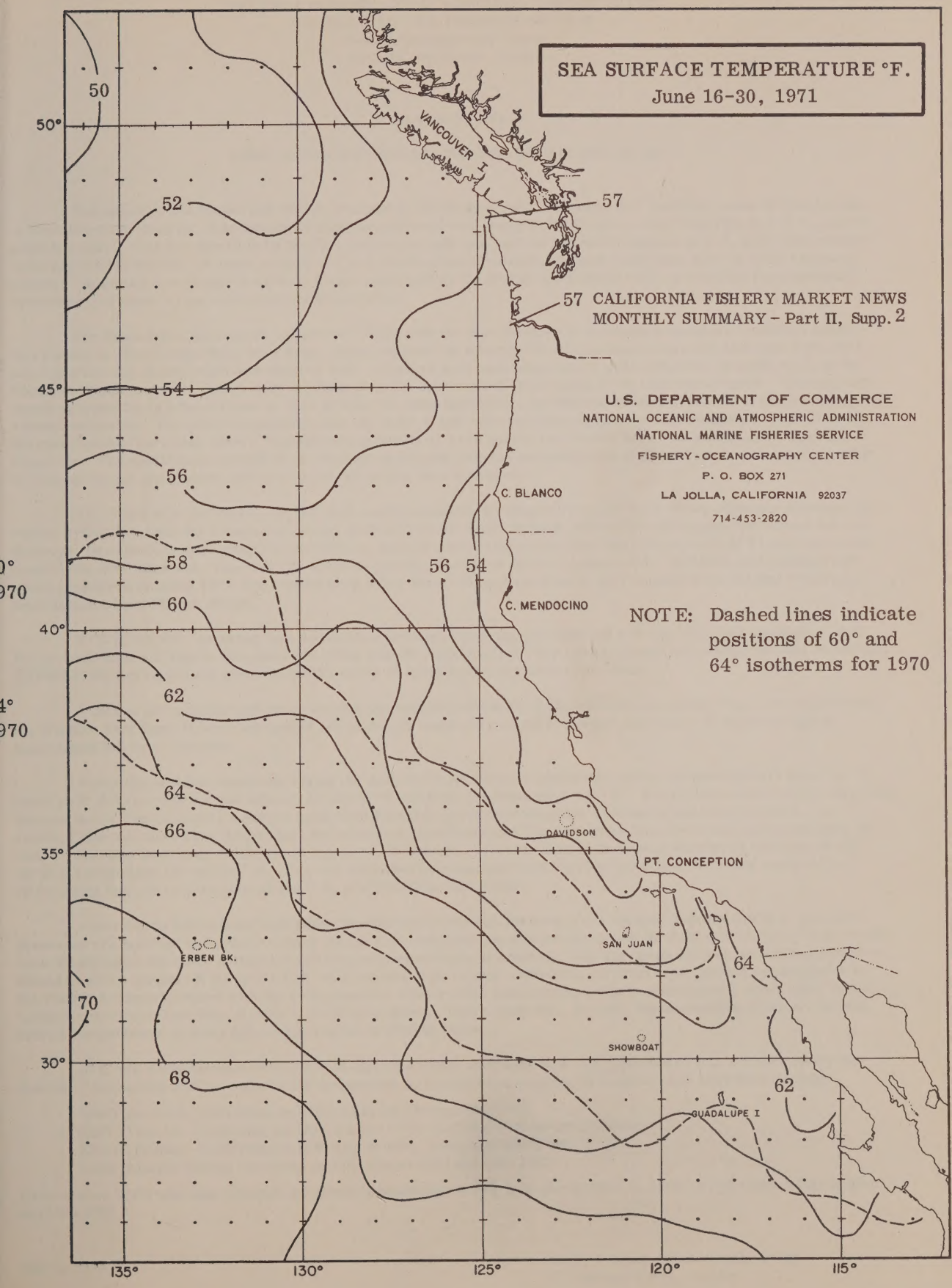

JUNE 1-30, 1971
FIG.6-DEVIATION OF SEA SURFACE TEMP. (°F.) FROM LONG TERM MEAN.
SHADED AREAS COLDER IN 1971.
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
YUCATAN
SAMOA ISLANDS
TONGA ISLANDS
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°


JUNE 1-30, 1971
FIG. 7- DEVIATION OF SEA SURFACE TEMP. (°F.) FROM JUNE 1970. SHADED AREAS COLDER IN 1971.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CALIFORNIA
YUCATAN
GUATEMALA
HONDURAS
NICARAGUA
PANAMA
GALAPAGOS ISLANDS
MARQUESAS
UNION ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
TUAMOTU ARCHIPELAGO
Tahiti
KERMADEC IS.
Guayaquil
Lima
Callao
Valparaiso
Acapulco
Manzanillo
Mazatlan
San Blas
Salina Cruz
Panama
Tumaco
Buenaventura
Trujillo
Talara
Paita
Pisco
Chala
Mollendo
Arica
Iquique
Antofagasta
Easter Island
Juan Fernandez Is.
Mas Afuera
Mas a Tierra
Valparaiso
Tehuantepec
Gulf of Panama
Gulf of Guayaquil
Gulf of Tehuantepec
Gulf of Fonseca
Gulf of Nicoya
Gulf of Papagayo
Gulf of Dulce
Gulf of Montijo
Gulf of Chiriqui
Gulf of Panama
Gulf of Guayaquil
Gulf of Tehuantepec
Gulf of Fonseca
Gulf of Nicoya
Gulf of Papagayo
Gulf of Dulce
Gulf of Montijo
Gulf of Chiriqui


JUNE 1961-1971
FIG. 8 — OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1012
1012
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


JUNE 1971
FIG. 9 - OBSERVED VALUES
-0000- BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1012
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


SEA SURFACE TEMPERATURE °F.
June 1-15, 1971
VANCOUVER I.
48
50
52
52
56
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - Part II, Supp. 1
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
FISHERY-OCEANOGRAPHY CENTER
P. O. BOX 271
LA JOLLA, CALIFORNIA 92037
714-453-2820
54
C BLANCO
54
56
52
50
49
C. MENDOCINO
58
NOTE: Dashed lines indicate positions of 60° and 64° isotherms for 1970.
60
62
DAVIDSON
PT. CONCEPTION
ERBEN BK.
64
SAN JUAN
62
SHOWBOAT
66
GUADALUPE I
60
68
70
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°



CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY – Part II, Supp. 2

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
FISHERY-OCEANOGRAPHY CENTER
P. O. BOX 271
LA JOLLA, CALIFORNIA 92037
714-453-2820

NOTE: Dashed lines indicate positions of 60° and 64° isotherms for 1970

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Fishery-Oceanography Center
La Jolla, California 92037

BULLETIN NO. 71-1

FIRST ALBACORE CATCHES FOR 1971 SEASON REPORTED

One albacore was landed and another was lost by the Oregon State University R/V YAQUINA about 520 miles west of Cape Blanco on June 25. The fish which weighed 14 pounds was caught in 59° F water while YAQUINA was on an oceanographic cruise. This is believed to be the first albacore caught this year on fish which migrate to U.S. west coast waters from the Central Pacific. A small number of 2 to 3 pound albacore were caught near Uncle Sam Bank in early February, however, these fish are thought to be from a very small part of the albacore population which is reported to occasionally overwinter and spawn in the vicinity of Guadalupe Island.

San Diego based sport boats and private yachts took the first albacore to be caught in southern California waters this season on June 26 near Sixty Mile Bank. Small numbers of albacore have been caught every day since the first catch was reported; the largest catch was about 40 fish. Albacore have been taken over a wide area from 20 miles south of San Clemente Island to the 213 fathom spot and from 35 miles southwest of Point Loma to the Dumping Grounds. The best indication of quantities of albacore was on June 26 near the Sixty Mile Bank when the fish showed in schools at the surface on several occasions. The water temperature was 63° to 64° F and some bait (saury) schools were observed. Since that date the sport catches have been lower. The fish are generally 12 to 18 pounds but several have been caught that weighed up to 20 pounds. The sport boats are still in the process of locating fishable concentrations of albacore and more scouting trips to different areas are planned, some to as far out as San Juan Seamount.

The NMFS R/V DAVID STARR JORDAN, which departed San Diego on June 28 for a 19-day albacore-oceanography cruise trolled five lines for 2 hours on June 29 in 59.8° F water about 30 miles WSW of San Juan Seamount without success. However, five albacore were caught by JORDAN on June 30 while trolling nine lines for 2 hours in 62.5° F water 200 miles west of San Juan Seamount. One fish was about 16 pounds, the others 10 to 11 pounds each. JORDAN also reported that water temperatures below 60° F are located along a line from Cortez Bank west to the Compass Rose and that rough seas have hampered her fishing efforts.

F/V TYPHOON, operating on a cooperative preseason scouting arrangement with the FOC, had a propeller shaft failure soon after starting to fish about 375 miles west of Cape Mendocino and is being towed for repairs into San Francisco. TYPHOON did not report any albacore catches prior to encountering mechanical problems.

A lack of price settlement has prevented any scouting activities by the commercial fishing fleet. The members of the Western Fish Boat Owners Association are asking 32 cents per pound for albacore this year. No breakthrough in negotiations has been reported.

Prevailing weather conditions during the June 16-30 period have caused sea surface temperatures to warm by as much as 2° F faster than normal between 25 and 42° N and from the coast out to 135° W. Sea surface temperatures have also warmed faster than normal in a narrow band about 50 to 100 miles wide along the Washington and Oregon coasts. As a result of this increased rate of warming, sea surface temperatures are now near their June 16-30 normal values along the entire west coast from Baja California to Vancouver Island and 2° F above normal in an area bounded by latitudes 30 and 40° N and longitudes 125 and 135° W. The only area that has remained below normal is north of 40° N and westward of a line ranging from 50 to 100 miles off the U.S. and Canadian west coasts.

According to information supplied by the Extended Forecast Division of the National Weather Service, sea level pressures are expected to be above normal off the U.S. and Canadian west coasts during the first half of July. These conditions should allow the above normal rate of temperature warming to continue, with the result that sea surface temperatures should be above normal off the entire U.S. and Canadian west coasts. However, expected above normal temperatures in the Pacific Southwest coupled with the high pressures offshore will cause strong north to northwesterly winds along the immediate coast from Cape Blanco south to Point Conception. These winds will, in turn, cause upwelling to occur, keeping coastal temperatures in this region about normal or slightly below.

FOC will begin its daily broadcasts of albacore fishing information on July 6 instead of July 1 as previously announced. Broadcasts will be made on AM frequencies by the following stations on weekdays and Saturday mornings:

WWD (La Jolla, California) on 4409.4 kHz at 0600 and 1945 PDT
KMY (Tiburon, California) on 4409.4 kHz at 0815 and 1545 PDT (weekdays only)
KRED (Eureka, California) on 1480 kHz at 0600, 1200, and 2000 PDT
KMX (Astoria Marine Operator) on 2598 kHz at 0600 and 1945 PDT

Radio station WWD will also transmit the albacore broadcast on SSB frequencies 9791.0, 13148.9 and 17294.9 kHz at 0600 and 1945 PDT.

July 1, 1971

Staff, Fishery-Oceanography Group
R. Michael Laurs, Leader